



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,600	02/18/2004	Chahee Peter Cho	57357-076	1019
7590 08/11/2005 McDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096			EXAMINER CUEVAS, PEDRO J	
			ART UNIT 2834	PAPER NUMBER

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/779,600

Applicant(s)

CHO ET AL.

Examiner

Pedro J. Cuevas

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,961,403 to Kawaguchi et al. in view of U.S. Patent No. 6,306,056 B1 to Moore.

Kawaguchi et al. disclose the construction of an engine generator set (10) for a vehicle (12) comprising:

- an internal combustion engine (16);
- a dynamoelectric machine (20) structurally coupled to the internal combustion engine by a shaft (22); and
- a portable enclosure (14) in which the internal combustion engine, dynamoelectric machine and controller are housed.

However, it fails to disclose:

- a dynamoelectric machine electrically coupled to a direct current source; and
- an autonomous range extender controller having at least one user input;

wherein in response to a user input to the controller, a sequence of range extender operations is initiated including a first phase in which electrical energization is applied from the direct current source to the dynamoelectric machine for operation thereof as a motor to drive the shaft in rotation, a second phase in which the engine is activated for

operation as a prime mover; and a third phase in which the dynamoelectric machine is activated in generator operation for providing electrical current to the vehicle.

Moore teach the construction of a dual engine hybrid electric vehicle comprising:

- an internal combustion engine (12, 18) having an ignition circuit and a fuel supply circuit, each of these circuits coupled to a respective output of an autonomous range extender controller (Figure 6) having at least one user input (brake signal);

- a dynamoelectric machine (28) electrically coupled to a direct current source (Figure 1);

- a speed sensor (column 3, line 53) indicative of shaft speed, and an engine temperature sensor (column 4, lines 49-52), each of these sensors coupled to a respective speed input and temperature input of the controller; and

- an inverter/converter circuit connected to electrical terminals of the dynamoelectric machine and to the controller, wherein the inverter/converter circuit is responsive to the controller to convert the direct current energization applied in the first phase to the dynamoelectric machine to alternating current for motoring operation, and to invert alternating current output of the dynamoelectric machine in the third phase for generator operation;

wherein in response to a user input to the controller (column 5, line 50 to column 6, line 63), a sequence of range extender operations is initiated including:

- a first phase in which electrical energization is applied from the direct current source to the dynamoelectric machine for operation thereof as a motor to drive the shaft in rotation,

a second phase in which the engine is activated for operation as a prime mover, and

a third phase in which the dynamoelectric machine is activated in generator operation for providing electrical current to the vehicle; and wherein the controller is:

configured to output signals to the ignition circuit and fuel supply circuit for prime mover activation in response to signals at the speed and temperature inputs attaining respective threshold values, and

responsive to a user termination input to apply an output signal to the fuel supply circuit to shut off the supply of fuel to the engine and, after a preset time delay, to output a signal to the ignition circuit to terminate engine ignition, thereby to avoid engine backfire;

for the purpose of providing additional driving torque to assist the first engine during periods of operation where increased levels of torque are required.

It would have been obvious to one skilled in the art at the time the invention was made to use the engine generator set disclosed by Kawaguchi et al. on the dual engine hybrid electric vehicle disclosed by Moore for the purpose of providing additional driving torque to assist the first engine during periods of operation where increased levels of torque are required.

3. With regards to claims 1-10, Kawaguchi et al. in view of Moore disclose method for controlling a dual engine hybrid electric vehicle having engine generator capable of supplying electrical energy to a vehicle, comprising the steps of:

applying electrical energization from a direct current power source by inverting an output voltage of the direct current source to alternating current to the dynamoelectric machine for operation thereof as a motor to drive the shaft in rotation in response to an initiation input (Moore; column 5, line 50 to column 6, line 63);

sensing the rotational speed of the shaft (Moore; column 3, line 53);

sensing the temperature of the engine (Moore; column 4, lines 49-52);

in response to a sensed rotational speed that meets a first predetermined speed threshold and a sensed engine temperature that meets a predetermined temperature threshold, supplying fuel to the engine and activating ignition of the engine for operation thereof as a prime mover (Moore; column 5, line 50 to column 6, line 63); and

after a predetermined time period of engine prime mover operation, activating the dynamoelectric machine for operation thereof as a generator by producing an alternating current output of the dynamoelectric machine and converting the alternating current output to a direct current output, and further comprising the step of applying the direct current output to charge the battery to provide an electrical current output (Moore; column 5, line 50 to column 6, line 63);

applying the direct current output to drive the traction motor;

wherein dynamoelectric machine generator operation is activated when the sensed shaft rotational speed meets a second predetermined speed threshold higher than the first predetermined threshold;

terminating the supply of fuel to the engine when the engine is to be stopped;

maintaining ignition activation of the engine after the fuel supply has been terminated; and

deactivating engine ignition after a preset time period when fuel has been eliminated from the engine, thereby to avoid engine backfire; and

wherein the range extender is self contained within an enclosure (Kawaguchi et al.; 14) that is independent of a vehicle and the steps of applying electrical energization to the dynamoelectric machine, supplying fuel to the engine, activating ignition of the engine, activating the dynamoelectric machine, terminating the supply of fuel and deactivating engine ignition, are controlled by a controller contained within the enclosure.

#### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (571) 272-2021. The examiner can normally be reached on M-F from 8:30 - 6:00.

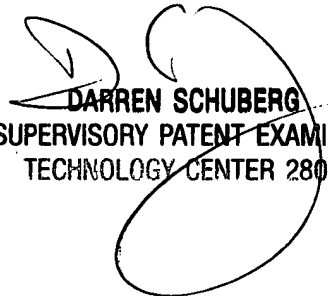
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2834

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pedro J. Cuevas  
August 5, 2005



**DARREN SCHUBERG**  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800